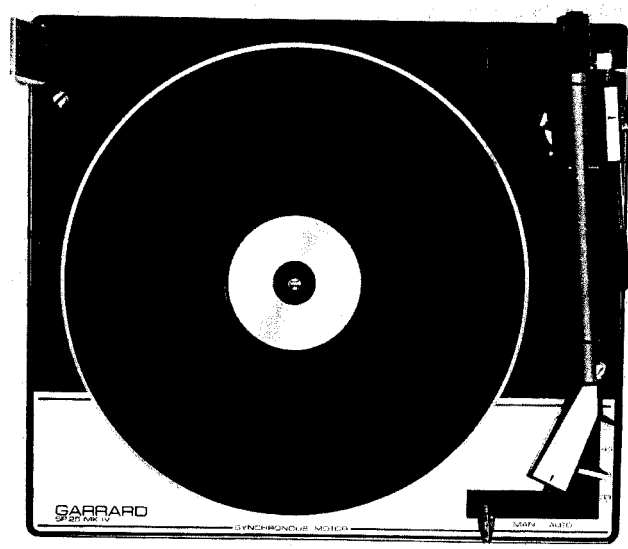
GARRARD SP25MK IV



RECORD CHANGER

SPECIFICATIONS

Speeds:	33 1/3, 45, 78 rpm
Drive system:	Idler-drive
Motor:	4-pole shading synchronous
Cartridge:	Magnetic type, SONY VL-30G
Optimum stylus force:	3 g
Stylus:	SONY diamond stylus ND-133 G (0.5 mil)

SONY®

SERVICE MANUAL

SECTION 1

DISASSEMBLY AND REPLACEMENT

Note: All screws are Phillips type (cross recess type) unless otherwise indicated.
(–) : slotted head.

1-1. STYLUS TIP REPLACEMENT

See Fig. 1-1.

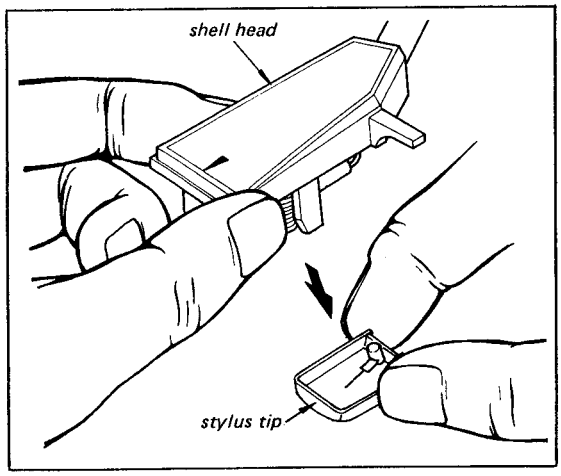


Fig. 1-1. Stylus tip replacement

1-2. CARTRIDGE REPLACEMENT

1. Place the tonearm on the tonearm rest.
2. See Fig. 1-2 and 1-3.

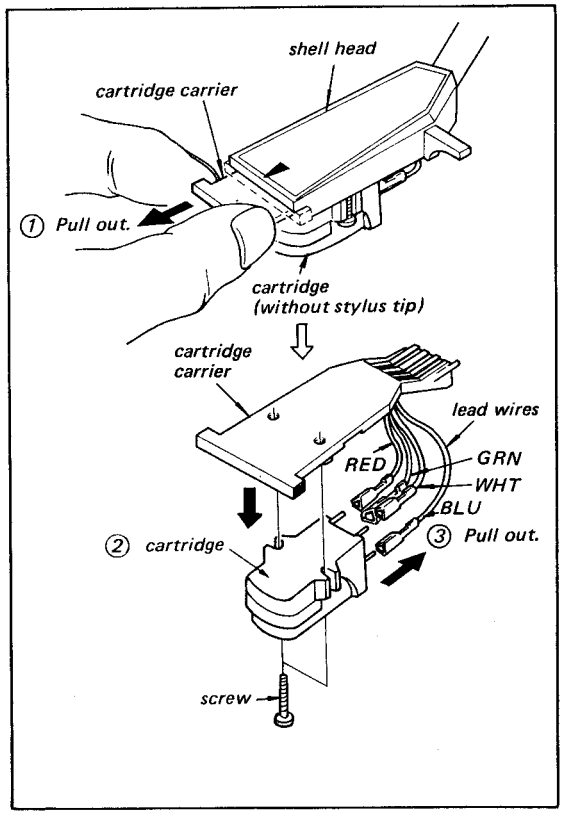


Fig. 1-2. Cartridge replacement

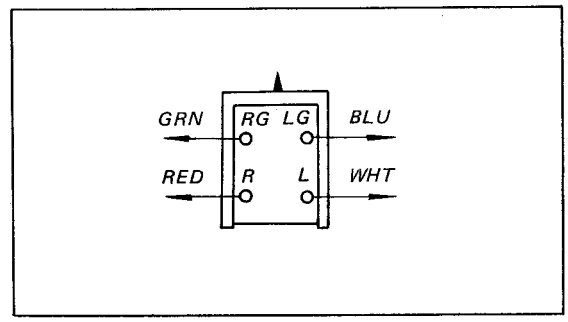


Fig. 1-3. Wiring diagram of cartridge

1-3. TONEARM REPLACEMENT

1. Unsolder the four lead wires from the terminal strip shown in Fig. 1-5.
2. Carefully unstick the tape holding the lead wires to the turntable base as shown in Fig. 1-5.
3. See Fig. 1-4 (① ~ ⑤).
4. When reinstalling the tonearm, refer to the lead wire connection shown in Fig. 1-5.

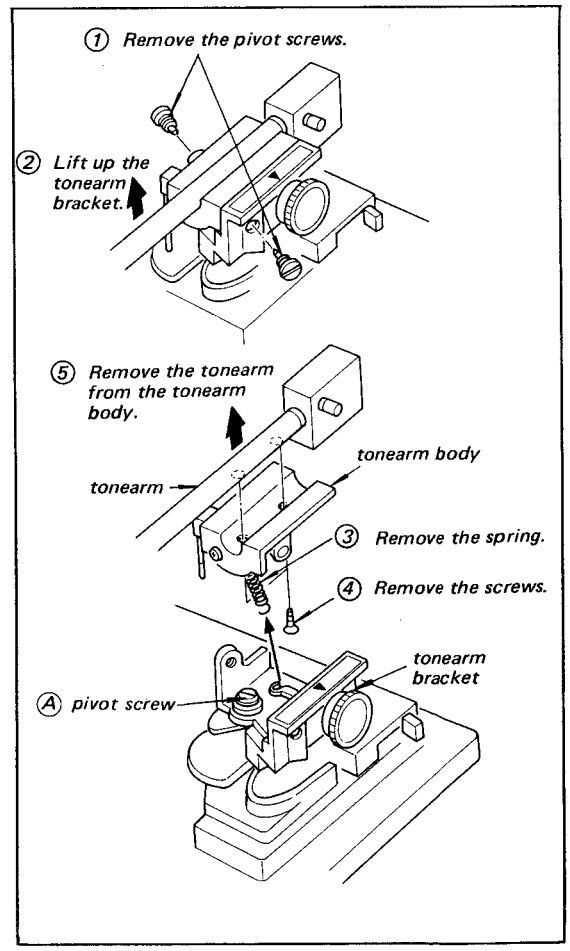


Fig. 1-4. Tonearm replacement

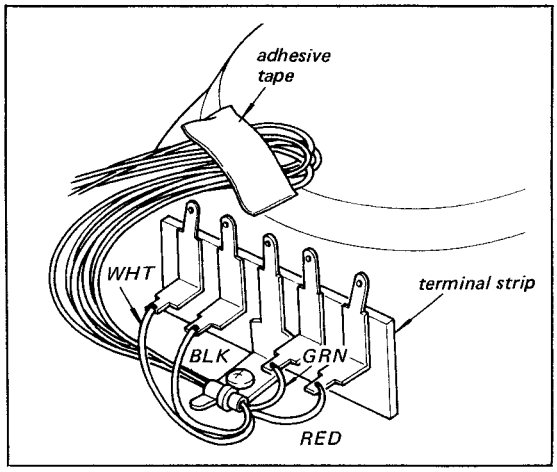


Fig. 1-5. Lead wire connection

1-4. TONEARM BRACKET REPLACEMENT

1. Remove the tonearm as described in Procedure 1-3.
2. Remove the tonearm bracket from the tonearm lever by taking out the pivot screw (Ⓐ) shown in Fig. 1-4.
3. Install the overload spring as shown in Fig. 1-6.

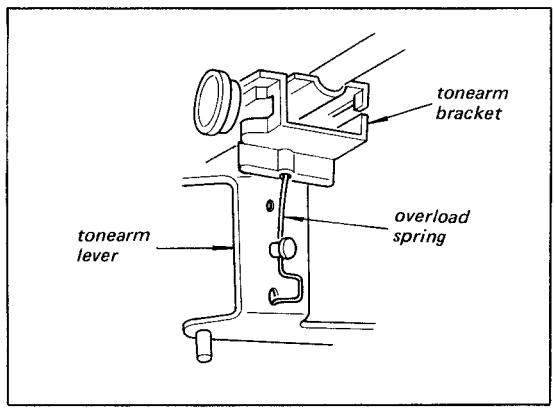


Fig. 1-6. Overload spring installation

1-5. TURNTABLE REMOVAL

See Fig. 1-7 (① ~ ④).

Note: Refer to Fig. 1-8 for turntable retaining clip installation.

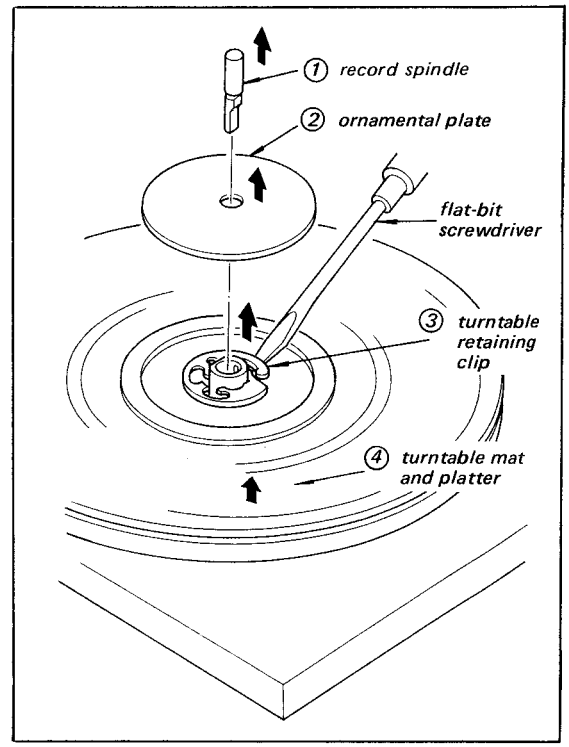


Fig. 1-7. Turntable removal

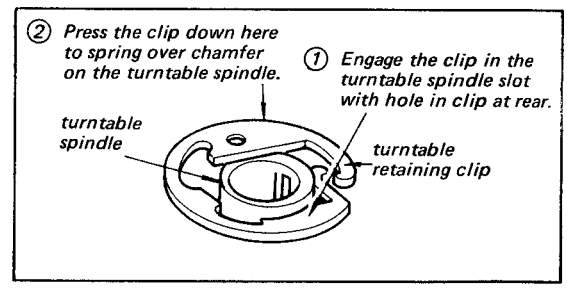

② Press the clip down here to spring over chamfer on the turntable spindle.
① Engage the clip in the turntable spindle slot with hole in clip at rear.
turntable spindle
turntable retaining clip

Fig. 1-8. Turntable retaining clip installation

1-6. TONEARM CAM REPLACEMENT

1. Turn the turntable clockwise by hand so that the guide plate is located at the center of long slit of tonearm cam as shown in Fig. 1-9.
2. See Fig. 1-9 (① ~ ②).
3. Remove the turntable as described in Procedure 1-5.
4. See Fig. 1-10 (① ~ ②).
5. Remove the tonearm cam carefully.

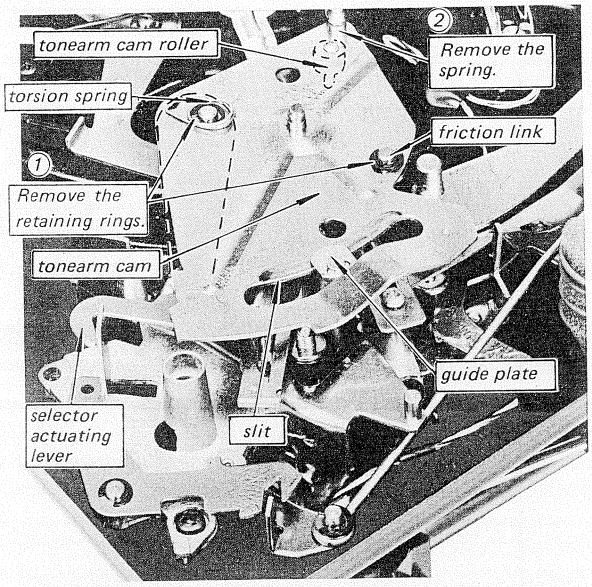


Fig. 1-9. Tonearm cam replacement (1)

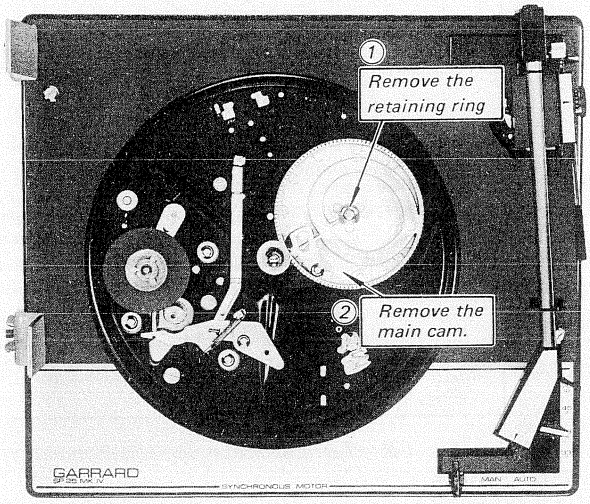


Fig. 1-10. Tonearm cam replacement (2)

Note: When refitting the tonearm cam, first attach the friction link to the cam with the retaining ring then with the selector actuating lever held in position shown in Fig. 1-9, locate the tonearm cam roller in the turntable base slot and main cam track, before locating it under its guide plate and on its pivot pin. At the same time, the main cam should come to the position shown in Fig. 1-11.

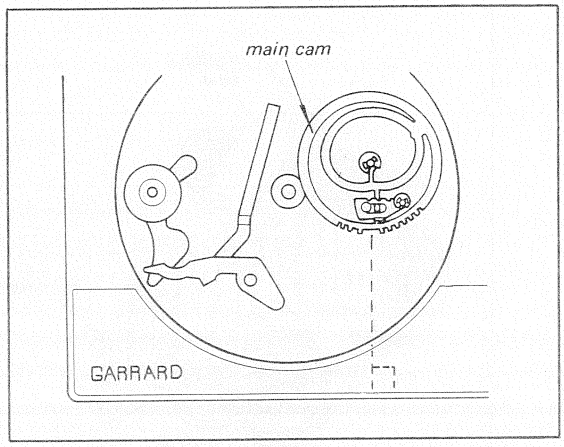


Fig. 1-11. Tonearm cam reinstallation

1-7. MOTOR REPLACEMENT

1. See Fig. 1-12.
2. See Fig. 1-13.
3. This frees the motor from the turntable base.

Note: After replacing the motor, perform intermediate wheel height adjustment as described in Procedure 2-5 on page 6.

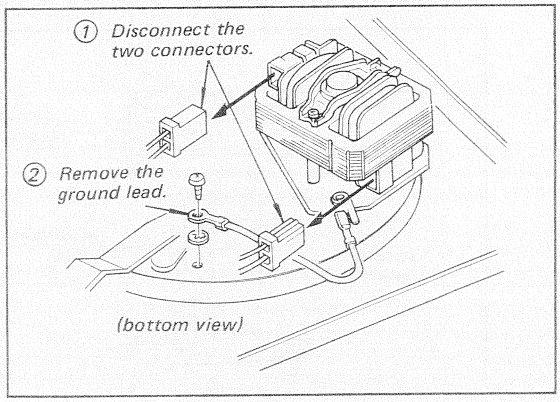


Fig. 1-12. Motor replacement (1)

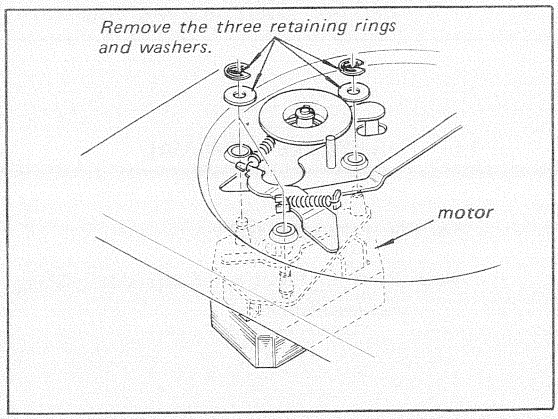


Fig. 1-13. Motor replacement (2)

SECTION 2

ADJUSTMENT AND MAINTENANCE

2-1. STYLUS FORCE ADJUSTMENT

1. Check that mechanism is not engaged by rotating the turntable slowly clockwise by hand until free running. Make sure cueing lever is set down.
2. Set the stylus force dial to zero.
3. Lift the tonearm from the its rest and remove the stylus cover.
4. Loosen the counterbalance weight clamp screw (see Fig. 2-1) and slide the counterbalance weight to position which balances the tonearm with the stylus tip about 3 mm (1/8") above the turntable mat.
5. Clamp the counterbalance weight.
6. Set the stylus force dial to 3. This shows the stylus force recommended for the cartridge (VL-30G). Numbers on the dial represent 0 to 5 grams.

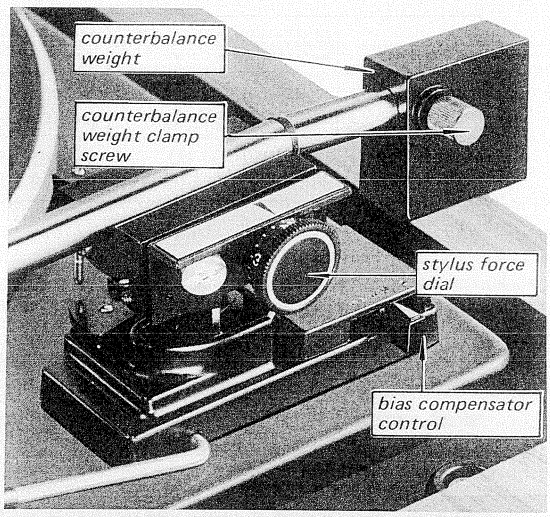


Fig. 2-1. Stylus force adjustment

2-2. BIAS COMPENSATOR ADJUSTMENT

Move the bias compensator control shown in Fig. 2-1 along its scale to the figure which corresponds to the previously-set figure for stylus force.

2-3. STYLUS DROP-POINT ADJUSTMENT

This adjustment is factory-set but can be altered, if necessary, by turning the stylus drop-point adjustment screw shown in Fig. 2-2.

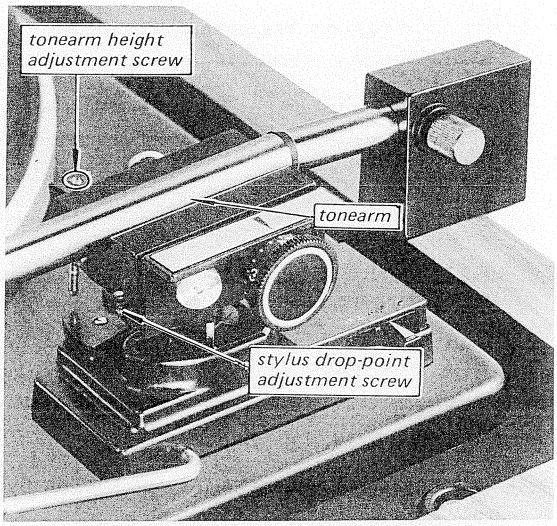


Fig. 2-2. Stylus drop-point and tonearm height adjustment

Table 2-1. Stylus drop-point adjustment

Turning direction of adjustment screw	Drop-point
Clockwise	Inwards
Counterclockwise	Outwards

2-4. TONEARM HEIGHT ADJUSTMENT

Adjust the tonearm height as shown in Fig. 2-3 by turning the tonearm height adjustment screw shown in Fig. 2-2.

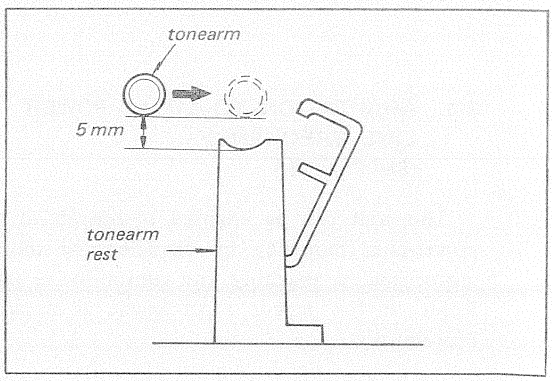


Fig. 2-3. Tonearm height adjustment

Table 2-2. Tonearm height adjustment

Turning direction of adjustment screw	Tonearm height
Clockwise	Ascend
Counterclockwise	Descend

2-5. INTERMEDIATE WHEEL HEIGHT ADJUSTMENT

1. Adjust the intermediate wheel height by means of the blade (See Fig. 2-4) so that the intermediate wheel runs in the center of the correct pulley step without rubbing the adjacent step.
2. If necessary, adjust intermediate wheel height by means of the blade shown in Fig. 2-4.

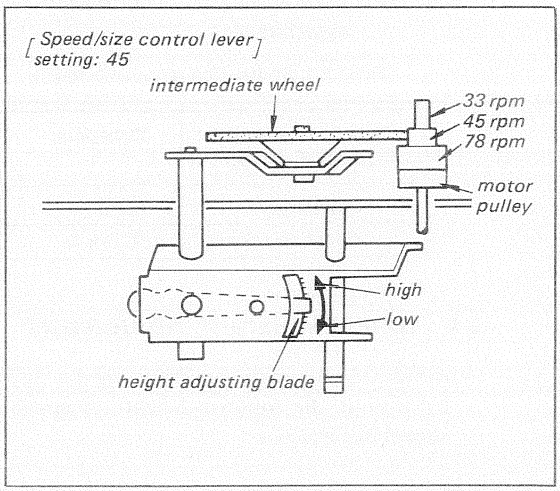


Fig. 2-4. Intermediate wheel height adjustment

2-6. ADAPTATION TO LOCAL POWER LINE FREQUENCY (See Fig. 2-5.)

This unit can be adapted to operate at another power-line frequency by changing the motor and motor pulley assembly and motor loom assembly. Refer to the motor replacement as described in Procedure 1-7.

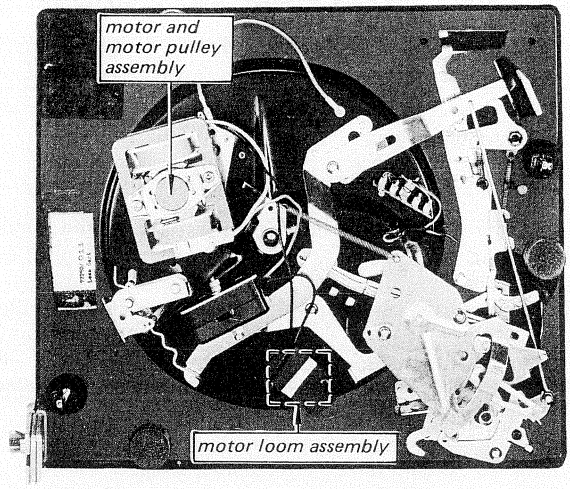


Fig. 2-5. Adaptation to local power line frequency

Table 2-3. Adaptation to local power line frequency

	Motor and motor pulley ass'y Part No.	Motor loom ass'y Part No.
220/240 volts 50 Hz	61027/014 (☆) X-4890-507-0 (○)	60365 (☆) X-4890-510-0 (○)
110/120 volts 60 Hz	61027/021 (☆) X-4890-508-0 (○)	61160/004 (☆) X-4890-509-0 (○)

Note: (☆) : Garrard Part No.
(○) : SONY Part No.

2-7. LUBRICATION (See Fig. 2-6.)

When the need is apparent, apply one or two drops of SONY oil OL-2K to the arrow portion (turntable shaft, intermediate wheel and main cam) shown in Fig. 2-6 and the cap of the motor shaft.

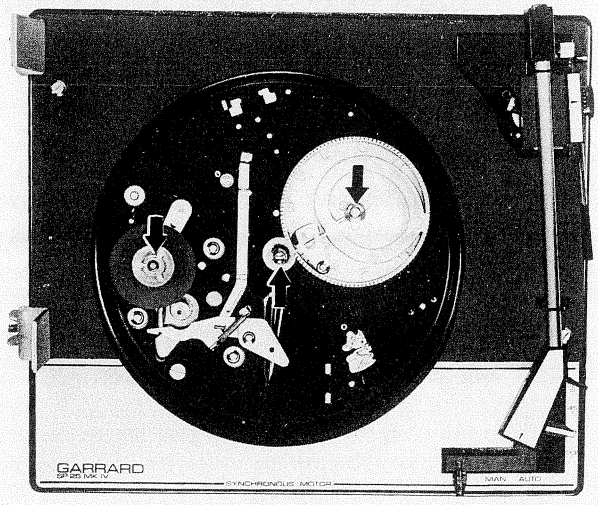


Fig. 2-6. Lubrication

SECTION 3

TROUBLESHOOTING

Note: Numbers in circle (❶ ~ ㉝) refer to the exploded views.

Fault	Cause	Remedy
TURNTABLE SPEED (a) Turntable fails to start, runs slowly or at wrong speed when switched on.	1 Oil or dirt on driving surfaces.	1 Remove turntable (See Procedure 1-7) and clean inside rim, periphery of intermediate wheel ❶ and motor pulley ❷ .
	2 Faulty intermediate wheel spring ❸ .	2 Check that the spring is secured. Move operating control to AUTO — spring should stretch. If it does not, replace it.
	3 Intermediate wheel support bracket ❹ not free.	3 Wheel ❶ should engage motor pulley ❷ firmly when switched on and retract when switched off. If not, lightly oil spindles of the speed change mechanism assembly or replace damaged parts.
	4 No voltage or low voltage at motor ❺ .	4 Remove loom plugs from motor, switch on and check wiring with voltmeter. If no power, check back to source outlet, looking for loose connections, faulty switch contacts etc. Voltage should not be lower than 110 V if low range supply or 220 V if high range.
	5 Faulty motor coil.	5 Remove plugs from motor ❺ to check continuity of coils with ohmmeter. Replace motor if necessary.
	6 Bearings of motor ❺ out of line.	6 If rotor does not spin freely, tap the motor body with a small block of wood (e.g. screwdriver handle) to realign bearings. Use only thin oil on these bearings; thick oil will clog them.
	7 Motor pulley ❷ or intermediate wheel ❶ height incorrectly.	7 Adjust the intermediate wheel height as described in procedure 2-5 on page 6.
	8 Bearings not free.	8 Check motor ❺, intermediate wheel ❶ and turntable bearings. Clean and lightly oil if necessary. See lubrication as described in Procedure 2-7 on page 6.
(b) Irregular turntable speed (wow and flutter).	1 Various.	1 See Fault (a). Causes and Remedies 1, 7 and 8.
	2 Worn or oversize holes in records.	2 Align the record concentrically on the turntable by hand. Avoid using records on a record changer whose mechanism may be wearing the record holes.
	3 Damaged rotor shaft of motor ❺ .	3 Replace motor ❺ .
	4 Flats on driving surface of intermediate wheel ❶ .	4 If running the unit for a few hours does not cure the fault, replace the wheel ❶ . **Note:** Do not switch the unit off from the power supply before it has stopped automatically, as the unretracted wheel ❶ may form flats.
TONEARM MOVEMENT (c) Tonearm tracks incorrectly.	1 Dust accumulated around stylus tip.	1 Clean carefully.
	2 Stylus force too low.	2 Check that the force is not lower than that recommended for the cartridge. Adjust if necessary - Refer to "Stylus force adjustment" described in Procedure 2-1 on page 5.
	3 Bias compensator incorrectly set.	3 Make sure that the bias compensator is set correctly to correspond to the stylus force applied. Refer to "Bias compensator adjustment" described in Procedure 2-2 on page 5.
	4 Worn or wrong size of stylus tip radius.	4 Replace stylus.
	5 Tonearm leads tight or trapped at rear of arm.	5 Make sure leads are slack and check that they are not caught in or touching mechanism below the unit plate.

Fault	Cause	Remedy
	6 Groove guard on record (raised rim).	6 If used in "Auto" mode, the stylus may land too far out and slide down the slope of the raised rim on certain records, jumping the first playing grooves. Reset the stylus drop-point position so that it lands further in. Refer to stylus drop-point adjustment described in Procedure 2-3 on page 5.
	7 Body of tonearm cartridge touches record.	7 Make sure any cartridge fixing screws are secure and that the slide is in position properly.
	8 Counterbalance weight clamped off center.	8 Check that the weight ❻ is clamped in an untwisted attitude.
	9 Excessive friction in friction link ❼.	9 Apply a drop of thin oil inside slot. See Fig. 3-1.
	10 Automatic trip links not free.	10 Move tonearm inwards by hand checking for link fouling trip pawl mechanism on main cam ❽ and auto stop link ❾. Reshape or replace as necessary.
	11 Damaged tonearm pivot screw ❿, ⓫, ⓬.	11 Replace as necessary.
(d) Tonearm lands on record too far out and/or in, on "Auto" play.	1 Drop-point incorrectly set.	1 Refer to "stylus drop-point adjustment" described in Procedure 2-3 on page 5.
	2 Friction link ❼ requires lubrication.	2 Apply a drop of thin oil inside slot. See Fig. 3-1.

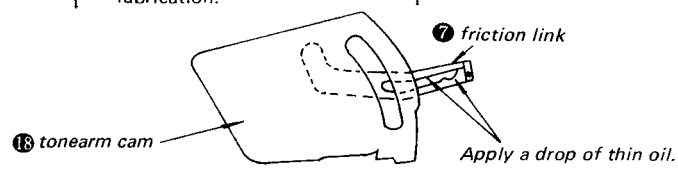


Fig. 3-1. Lubrication point

(e) Tonearm fails to lower.	1 Cueing lever ⓭ not lowered.	1 Lower the cueing lever and check cueing height set correctly.
	2 Lifting spindle mechanism (⓮, etc.) not free.	2 With tonearm raised slightly, lift the platform moulding at the top of the spindle. Although damped it should return slowly through pressure of spring ⓯. If not, check for damage or restriction. Also check that lifting spring ⓰ has not slipped from its retaining shoulder on the spindle. See Fig. 3-2.
	3 Tonearm pivot screws ❿ and ⓬ not free.	3 Remove the pivots and check them for damage. Replace them if necessary.

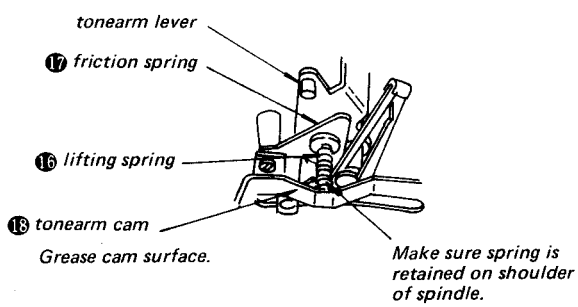


Fig. 3-2. Lifting spring location

Fault	Cause	Remedy
(f) Tonearm begins to lower then swings in.	1 Tonearm leads tight or trapped.	1 Slacken if necessary and see that they are not caught in mechanism below the unit plate.
	2 On "Auto" play, lifting spring ⑯ or friction spring ⑰ binding (See Fig. 3-2).	2 Check that the lifting spring is secure and moves freely. With lifting spring held clear, deflect friction spring away from tonearm cam ⑱ ; it should spring back when released. Replace damaged spring (s). See Fig. 3-2.
(g) Tonearm fails to lift and return at the end of the record.	1 Various.	1 See Fault (c). Causes and Remedies 1 to 5, 7, 8 and 9. Check that the lug on the trip pawl mounted on main cam ⑧ is square. Reshape it if necessary and make sure the trip pawl pivots freely.
	2 Non-standard record.	2 Replace record.
(h) Tonearm lowers too slowly when cueing.	1 Tight bearings or mechanism fouling.	1 Make sure that the tonearm pivots freely and that tonearm leads or mechanism do not restrict its movement. Note that a descent time of up to several seconds is considered acceptable and is unlikely to be caused by excess damping fluid.
(i) Tonearm wavers when lowered during cueing.	1 Play in lowering mechanism.	1 Make sure lock nut ⑲ is in its factory set position, keeping spring ⑳ in compression. The top of the nut should be $\frac{1}{16}$" (1.5 mm) in from the underside of the cast lug on tonearm body ㉑ . Also make sure that spring ⑮ is positioned so that its lower tail lodges against lifting platform ⑭ and its top tail pushes against the back of the boss on upper casting ㉒ thus preventing slack movement in the lifting platform.
	2 Lowering platform too smooth.	2 Rough up the underside of the platform rivetted to the top of tonearm lever ㉓ with fine emery paper.
(j) Fails to select, switches off.	1 Interselector lever bent.	1 Make sure tail of interselector lever on lower casting ㉔ makes appropriate contact with tail of switch lever ㉕ .
NOISE (k) Rumble, heard through speaker (s) while stylus is in blank record groove.	1 Rumble on record.	1 Check by playing other records, that a particular record is not at fault.
	2 Lack of lubrication of drive mechanism.	2 See lubrication as described in procedure 2-7 on page 6.
	3 Intermediate wheel ❶ rubbing against side of motor pulley step.	3 Check heights of wheel. See intermediate wheel height described in procedure 2-5 on page 6.
	4 Driving surface of intermediate wheel ❶ dirty, indented or hardened.	4 Clean the wheel with a cloth or scrape its driving surface to remove dirt. If this and running the unit for a few hours does not help, replace the wheel ❶ .
	5 Faulty installation	5 Check that the unit floats freely on its mounting springs ㉖ with damping pads ㉗ in place, that the motor ❺ hangs freely in its rubber grommets ㉘ and that no part of the mechanism is in contact with the mounting board.
	6 Worn or dirty turntable bearings.	6 Clean cushion ring ㉙ , thrust washers ㉚ , ㉛ and ball race ㉜ . Oil the ball race and replace the thrust washers if worn, or the rubber cushion ring if hardened. Make sure cushion ring ㉝ is positioned on the cast turntable boss. Check that thrust washers have polished faces to bearings.
(l) No sound.	1 Open circuit in tonearm leads.	1 Check the continuity of the tonearm leads from the cartridge to the tag strip (disconnect the cartridge before making this test). Make sure push-on tags are firmly in position.

SECTION 4
DIAGRAMS

4-1. SCHEMATIC DIAGRAM

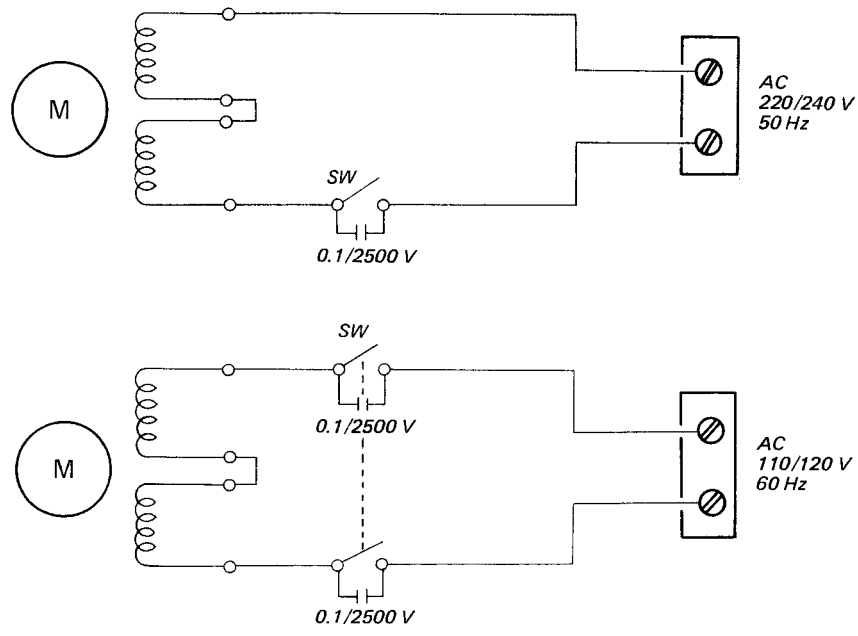


Fig. 4-1.

4-2. PHONO-OUT WIRING DIAGRAM

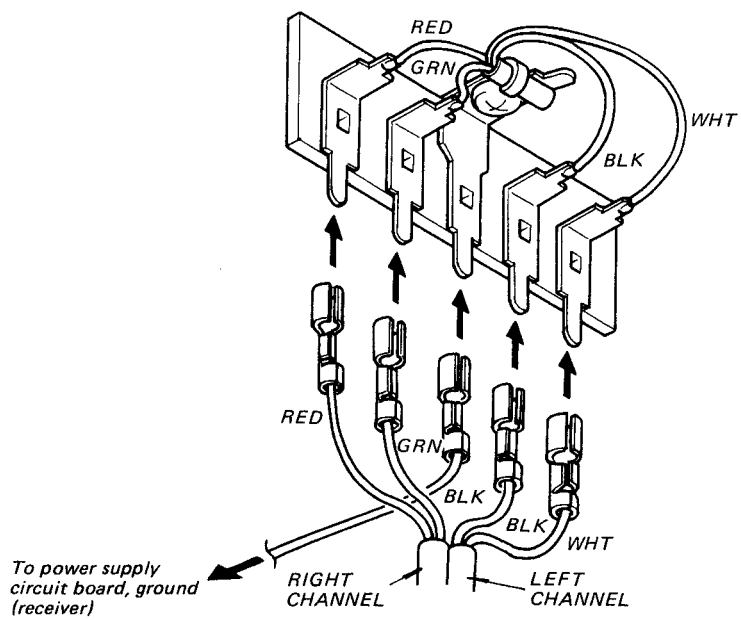
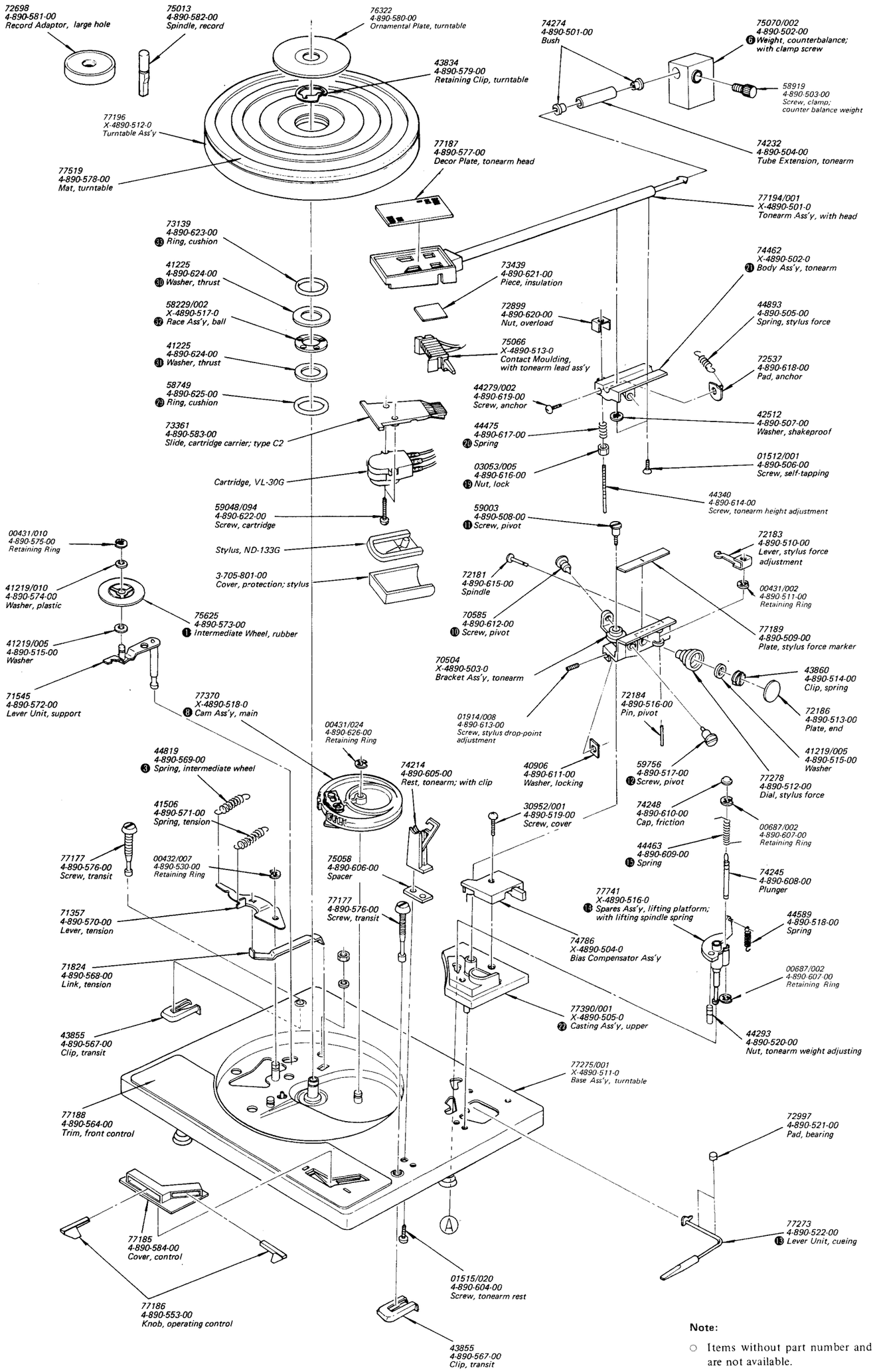


Fig. 4-2.

Note: There are every two part numbers in the exploded views.

Ex. 72181 . . . . . Garrard Part No.
4-890-615-00 . . . . . SONY Part No.
Spindle

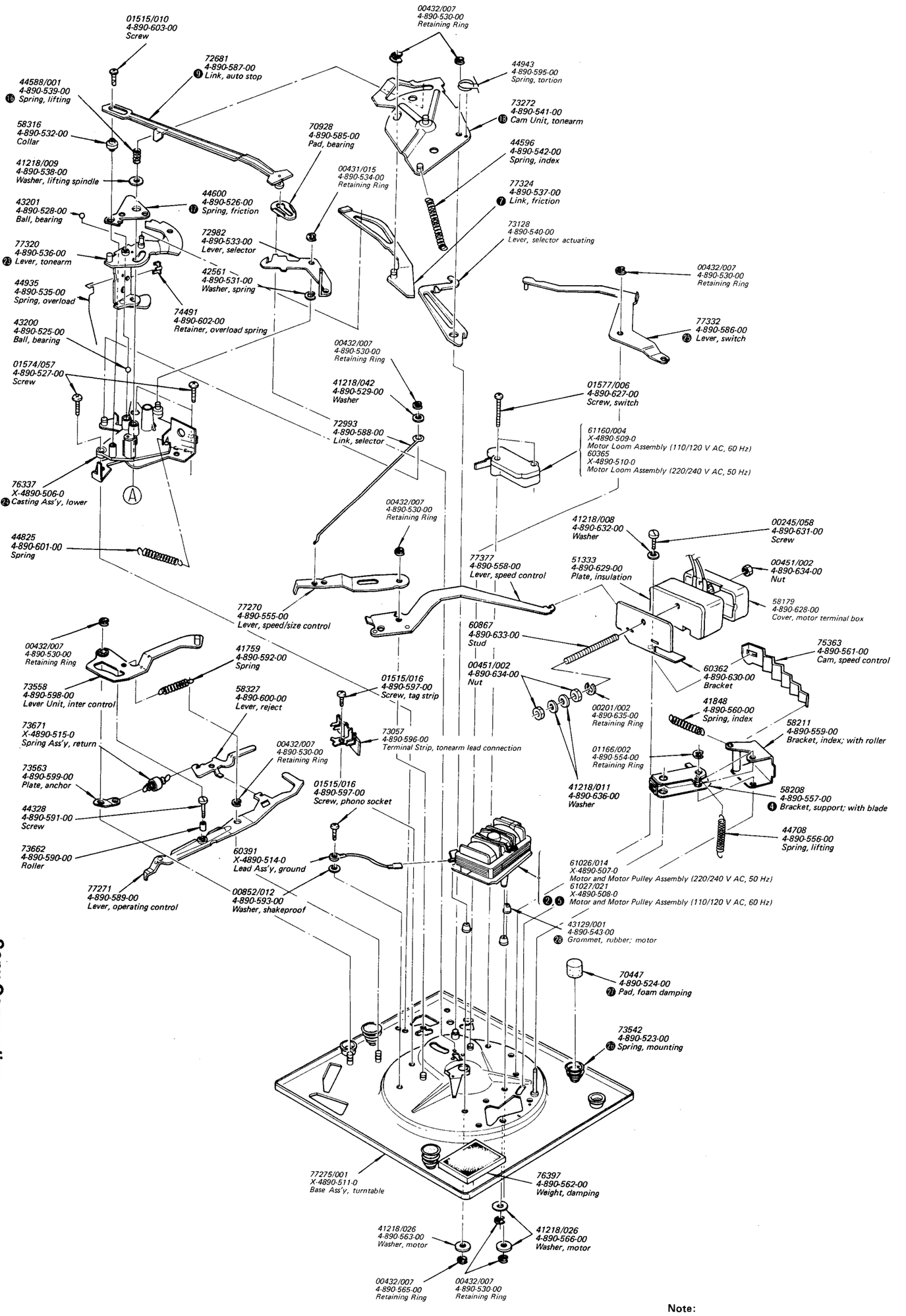


Note:

- ○ Items without part number and description are not available.
- ○ All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

Note: There are every two part numbers in the exploded views.

Ex. 73662 . . . . . Garrard Part No.
4-890-590-00 . . . . . SONY Part No.
Roller



Note:

- ○ Items without part number and description are not available.
- ○ All screws are Phillips (cross recess) type unless otherwise noted.
  (−) = slotted head

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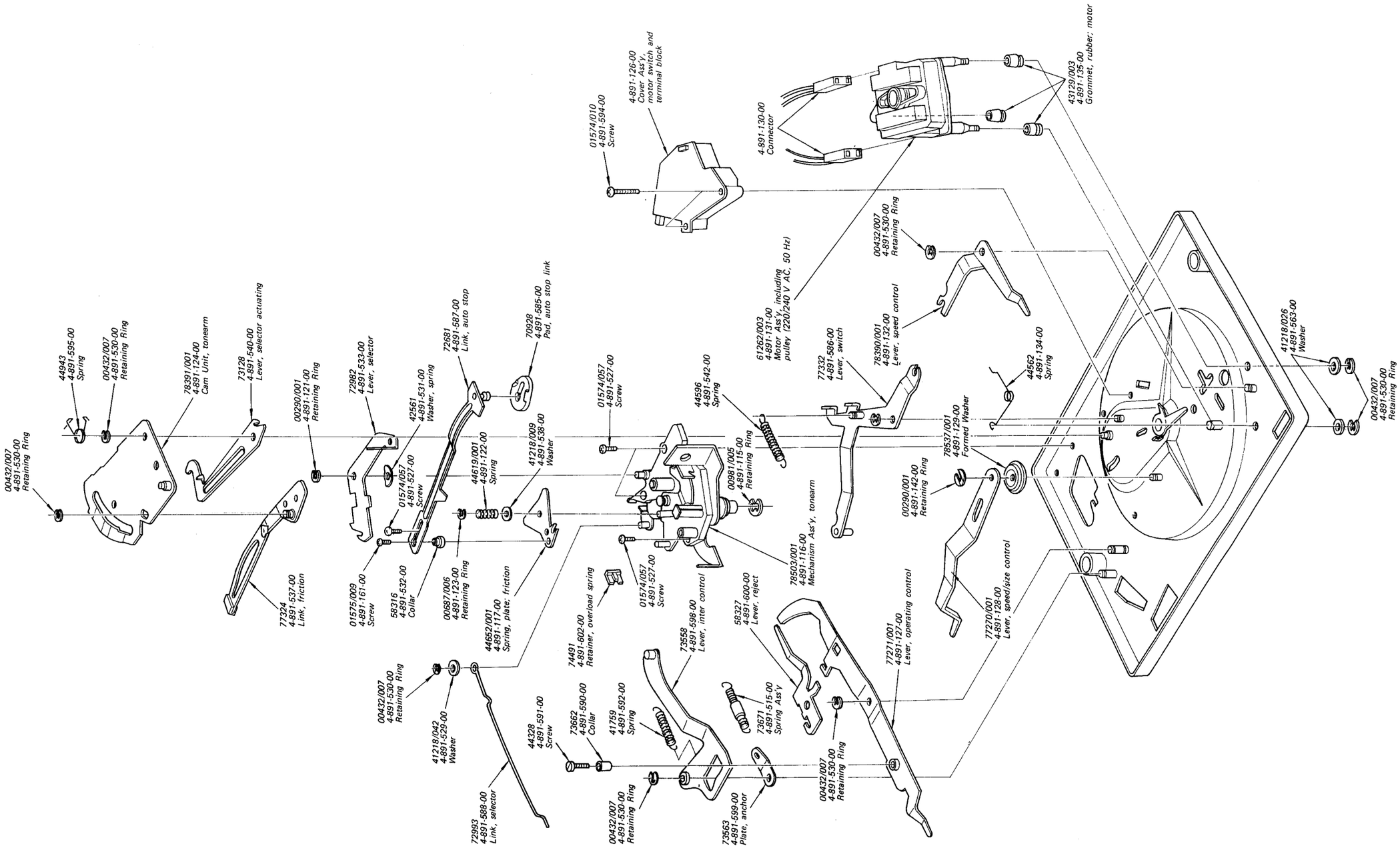
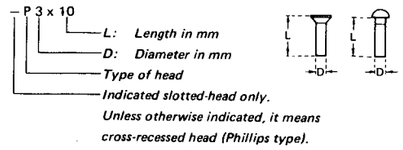
3-3. For Garrard Model 35SB (2)

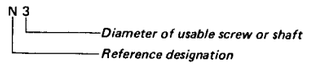


4. HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

9-958-302-81

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7C0605-3
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